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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/810,887	03/29/2004	Hak-Sun Chang	6192.0361.US	1078

7590 11/30/2005

McGuireWoods LLP
Suite 1800
1750 Tysons Boulevard
McLean, VA 22102

EXAMINER

VU, PHU

ART UNIT	PAPER NUMBER
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2871

DATE MAILED: 11/30/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.	Applicant(s)	
10/810,887	CHANG, HAK SUNG ET AL	
Examiner	Art Unit	
Phu Vu	2871	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1, 2, 5- 7, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto et al. US Patent No. 5825445 in view of Kishimoto et al. US 6396559.

Regarding claims 1 and 5, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate, wherein liquid crystal molecules on both substrates are aligned antiparallel to each other (see fig. 3 LC molecules 13a and 13b).

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate, and wherein the color of the spacers is black. Kishimoto teaches a ball type black spacer formed in the pixel region (see figure 9 element 530 and column 18 lines 48-50) to reduce light leakage and provide spacing between the substrates. Therefore, at the time of the invention it would have been obvious to combine black spacers with Okamoto's LCD in order to reduce light leakage and provide spacing between the substrates.

Regarding claim 6 and 10, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate, wherein the alignment of the liquid crystal layer is OCB type (see abstract).

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate, and wherein the color of the spacers is black. Kishimoto teaches a ball type black spacer formed in the pixel region (see figure 9 element 530 and column 18 lines 48-50) to reduce light leakage and provide spacing between the substrates. Therefore, at the time of the invention it would have been obvious to combine black spacers with Okamoto's LCD in order to reduce light leakage and provide spacing between the substrates.

Regarding claim 2 and 7, the Okamoto teaches a display, which further comprises a compensation film (fig. 3 element 30) and a polarizer (fig. 3 element 20).

Claim 12, 13 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view Kishimoto in view of Watanabe US Patent No. 5617228..

Regarding claim 12, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element 11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate.

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate, and wherein the light transmittance of the spacer is lower than 3%. Kishimoto teaches a black spacers which would have less than 3% transmittance formed in the pixel region (see figure 9 element 530 and column 18 lines 48-50) to reduce light leakage and provide spacing between the substrates. Therefore, at the time of the invention it would have been obvious to combine black spacers with 3% transmittance with Okamoto's LCD in order to reduce light leakage and provide spacing between the substrates.

Okamoto and Kishimoto fail to teach a number of spacers less than 90 in one square millimeter, however Watanabe teaches a ball type spacers of spacer density of 60 spacers/mm allows for smaller diameter spacers that does has no adverse affects to the display quality (column 13 line 65 – column 14 line 3). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a spacer density of 60/mm (less than 90 mm) in order to eliminate adverse affects to the display quality.

Regarding claim 13, the Okamoto teaches a display, which further comprises a compensation film (fig. 3 element 30) and a polarizer (fig. 3 element 20).

Claims 18 – 19 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Watanabe US Patent No. 5617228.

Regarding claims 18 and 22, Okamoto teaches a liquid crystal display comprising an upper substrate (fig. 3 element 11) with common electrode (fig. 3 element

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11a) thereon, a lower substrate with pixel electrode thereon, a liquid crystal layer (fig. 3 element 13) injected between the upper and lower substrate.

Okamoto fails to teach spacers positioned between the upper substrate and the lower substrate and a number of spacers less than 90 in one square millimeter, however Watanabe teaches a ball type spacers of spacer density of 60 spacers/mm allows for smaller diameter spacers that does has no adverse affects to the display quality (column 13 line 65 – column 14 line 3). Therefore, at the time of the invention, it would have been obvious to one of ordinary skill in the art to use a spacer density of 60/mm (less than 90 mm) in order to eliminate adverse affects to the display quality and provide uniform spacing between the substrate.

Regarding claim 19, the Okamoto teaches a display, which further comprises a compensation film (fig. 3 element 30) and a polarizer (fig. 3 element 20).

Claims 3-4 and 8-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Kishimoto in view of Miller et. al. US Patent No. 5247378.

Okamoto and Kishimoto teach all the limitations of claims 3-4 and 8-9 except the slow axis compensation film not parallel to the transmittance axis of the polarizer and the slow axis of the compensation layer and the angle of the slow axis of the compensation film and the transmittance of the polarizer being about 45 degrees. Miller teaches a slow axis oriented at 45 degrees to the axis of a polarizer to perform filtering with a narrow band pass. Therefore, at the time of the invention it would have been

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obvious to one of ordinary skill in the art to orient the slow axis 45 degrees from the transmission axis of the polarizer to perform filtering with a narrow band pass.

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Kishimoto in view of Watanabe in view of Miller et. al. US Patent No. 5247378.

Okamoto, Kishimoto, and Watanabe teach all the limitations of claims 14-15 except the slow axis compensation film not parallel to the transmittance axis of the polarizer and the slow axis of the compensation layer and the angle of the slow axis of the compensation film and the transmittance of the polarizer being about 45 degrees. Miller teaches a slow axis oriented at 45 degrees to the axis of a polarizer to perform filtering with a narrow band pass. Therefore, at the time of the invention it would have been obvious to one of ordinary skill in the art to orient the slow axis 45 degrees from the transmission axis of the polarizer to perform filtering with a narrow band pass.

Claims 20 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Kishimoto in view of Watanabe in view of Miller et. al. US Patent No. 5247378.

Okamoto, Kishimoto, and Watanabe teach all the limitations of claims 20-21 except the slow axis compensation film not parallel to the transmittance axis of the polarizer and the slow axis of the compensation layer and the angle of the slow axis of the compensation film and the transmittance of the polarizer being about 45 degrees. Miller teaches a slow axis oriented at 45 degrees to the axis of a polarizer to perform filtering with a narrow band pass. Therefore, at the time of the invention it would have

been obvious to one of ordinary skill in the art to orient the slow axis 45 degrees from the transmission axis of the polarizer to perform filtering with a narrow band pass.

Claims 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto, and Kishimoto in view of Bos US Patent No. 5410422.

Okamoto and Kishimoto teach all the limitations of claim 11 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Kishimoto in view of Watanabe in view of Bos US Patent No. 5410422.

Okamoto, Kishimoto and Watanabe teach all the limitations of claim 17 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Okamoto in view of Watanabe in view of Bos US Patent No. 5410422.

Okamoto and Watanabe teach all the limitations of claim 23 except a compensation layer that has a smaller dispersion of birefringence than the liquid crystal layer. Bos teaches a compensator birefringence with 60 to 85 percent the product of a cell gap distance and birefringence of the cell (dispersion birefringence of LC layer) to compensate for color shifting (see column 7 lines 46-65). Therefore, at the time of the invention, it would have been obvious to use a compensator with lower birefringence than the dispersion birefringence of the LC cell reduce color shifting the display.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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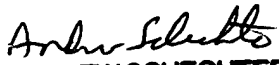
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phu Vu whose telephone number is (571)-272-1562.

The examiner can normally be reached on 8AM-5PM M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert Kim can be reached on (571)-272-2293. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Phu Vu
Examiner
AU 2871


ANDREW SCHECHTER
PRIMARY EXAMINER